

REMARKS

Applicant wishes to thank the Examiner for the detailed remarks. Claims 8, 14, 26, and 33 have been amended. Claims 1-7, 9, 13, 17-25, 27, 29-31, 36-39, and 41-42 have been cancelled. New claims 43- 51 are presented Accordingly, claims 8, 10-12, 14-16, 26, 28, 32-35, 40, and 43-51 are pending.

Drawings

Figure 6 has been amended to further clarify the cross-section lines. No new matter has been added.

REJECTIONS

In the Advisory Action, the Examiner argues that:

Continuation of 11. does NOT place the application in condition for allowance because: The claims stand as rejected in the final rejection. Applicant's attempt to clarify the original drawings through the use of arrows within the remarks is not persuasive, as the arrow denoting what is purported to be a raised area on the second side of the spring is appears to be directed at element 40, not at any part of the spring 38. Applicant has conceded the original drawings are improper. Repeated reviews of the drawings as originally show no evidence of a second raised portion on a side opposite the first raised portion within the drawings as originally filed. Applicant recites a definition for a belleville spring and washer, and the makes the unsupported conclusory statement "each of which utilize the term washer which is synonymous with planar" (4/15/08 remarks, page 11). The examiner disagrees with the contention that a washer is synonymous with planar, particularly in view of applicants supplied definitions which clearly recite that a belleville spring is a "conical shaped washer" and that a belleville washer is a "cupped spring washer", both of which like in three planes, and therefore, neither of which are planar. Applicant's arguments regarding Baninger are not persuasive. First, claim 8 recites no limitations related to a spring of any kind. The claims are not in condition for allowance as Baninger discloses all of the elements recited within the claim. Further, applicant's amendments do not limit the scope of the claims to a single spring, there is no recitation within the claims prohibiting the claim from reading as a plurality of spring elements functioning together as a single spring.

Applicant respectfully disagrees.

35 U.S.C. §112

Claims 13-15, 26-29 and 32-41 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Applicant respectfully traverses these rejections. As discussed below, Applicant's argument overcomes this rejection.

FIRST AND SECOND RAISED PORTION ARE DISCLOSED

As illustrated in the highlighted section and expanded highlighted section reproduced below, there is a portion of a raised area located at the lower portion of spring 38 which faces towards the left of the page [PORTION OF #2 RAISED AREA ON OTHER SIDE OF SPRING 38]. Notably,

the area between the cross-section cut of the spring 38 and the spacer 40 shows the full spring at the rear of arc, i.e., behind the axis as will exist between the shoulders 66, 66' which are separated by the spring 38.

Applicant concedes that the cross-hatching as originally provided may not have been exactly correct, however, this is of no consequence as there is a raised area shown facing to the right of the page [#1 RAISED AREA ON ONE SIDE OF SPRING 38] and there is a portion of a raised area on the opposite side of the spring 38 [PORTION OF #2 RAISED AREA ON OTHER SIDE OF SPRING 38] as reproduced below. These raised areas will form said ~~generally flat biasing spring~~ generally flat spring into a circumferential wave shape to axially preload said first bearing cup relative said second bearing cup as recited in applicant's amended claims. That is, when a line is traced about the circumference of the ~~generally flat biasing spring~~ generally flat spring when the spring is axially compressed, a circumferential wave shape is formed.

“PLANAR” SPRING

Applicant respectfully submits that one skilled in the relevant art would understand that a Flat spring distinguishes from a coil spring. As defined in the Merriam-Webster Unabridged Dictionary (also attached):

Main Entry: **'wash-er** Pronunciation Guide
Pronunciation: 'wɒshə(r), 'wāsh-, 'wɔɪsh-, ÷ 'wɔɪsh- or 'wārsh-
Function: *noun*
Inflected Form(s): -s
Etymology: Middle English *wassher*, from *wasshen* to wash + -
er
1 a : a person who washes ; *specifically* : a worker who cleans by washing (as clothes, animals, or materials or products in processes of preparation, manufacture, or maintenance) b : a machine for washing something: as (1) : a device for removing dirt and soluble impurities from pulp and paper stock (2) : WASHING MACHINE (3) : an apparatus or device for washing photographic materials to remove soluble chemical products (as produced by development or fixing) (4) : an apparatus in which gases are washed : SCRUBBER c <rotary *washers*>
2 [Middle English; from the motion of its tail resembling the motion of one washing clothes or dishes] *dialect England* : PIED WAGTAIL
3 : any of various flat thin rings or perforated plates (as of metal or leather) used in joints or assemblies to insure tightness, prevent leakage, or relieve friction -- see LOCK WASHER, SPRING WASHER
4 [so called from its habit of washing its food before eating] : RACCOON

Applicant has amended each of the claims to recite a generally flat spring. Applicant has also shown in the drawings above that raised areas were shown on both sides of the generally flat spring in the original drawings. These raised areas, when the flat biasing spring is located between the first bearing cup and the second bearing cup will form a circumferential wave shape. That is, the circumferential wave shape is produced by forces on the raised areas as the raised areas are offset and on opposite sides of the generally flat spring.

Nonetheless, Applicant respectfully submits that one skilled in the art would know or be able to determine from the original specification and drawings that the spring creates the circumferential wave shape from Applicant's original paragraph 24 reproduced below:

[0024] Returning to Figure 2, in the particular example provided the spring 38 is a cylindrical beam spring. Compression of the spring 38 creates a wave shape and preloads the outer races 42 of the first and second bearings 30, 34 in the direction of axis A-A. Alternatively, other biasing members may be used for the spring 38 such as a Belleville spring.

The original disclosure thereby provides dispositive evidence showing that Applicant had possession of the circumferential wave shape even irrespective of how that “wave shape” is produced, e.g., cylindrical beam spring, Belleville spring, offset raised areas, washer, etc.

35 U.S.C. §102(b)

***Baninger* (1851561)**

Claims 8, 10-16, 26, 27-30 and 32-36 were rejected under 35 U.S.C. §102(b) as being anticipated by *Baninger* (1851561). Applicant respectfully traverses this rejection. *Baninger*, locates *two* springs within the casing or journal box 64, each of which interact with one of the bearing cups 86 or 84 and a ring 94.

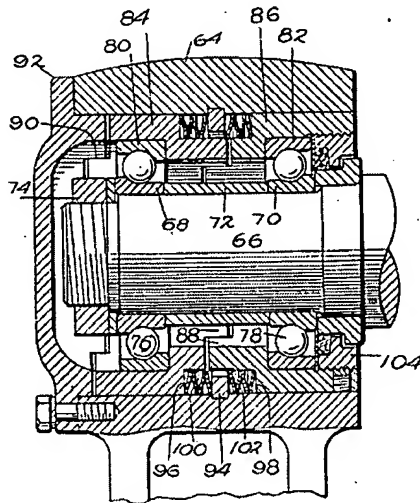


Fig. 3.

That is, each *Baninger* spring 100 or 102, aside from not even being a generally flat spring, interacts with only *one* bearing cup and the ring 94, not with both said first bearing cup and said second bearing cup as recited by Applicant. Since *Baninger* biases the springs 100 and 102 off the ring 94 which is fixed to the housing (journal box 64), *Baninger* has a limited range of axial shaft travel. That is, as *Baninger* moves in one direction the thrust load or preload on one bearing is reduced while the thrust load or preload on the other bearing is increased.

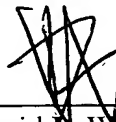
Furthermore, *Baninger* fails to disclose or suggest a generally flat spring which is formed into a circumferential wave shape to axially preload said first bearing cup relative said second bearing cup. That is, each *Baninger* spring 100 or 102 is a conventional coils spring which are individually axially compressed relative fixed ring 94. The claims are properly allowable for this reason as well.

New claims 43-51 recite further features of the present invention which are neither disclosed nor suggested by the cited references and are thus properly allowable. Applicant's new claims are generally directed to the axial preload provided by the generally flat spring and axial shaft travel. Since Applicant's generally flat spring is not seated to the housing the design has no limitation on axial shaft travel and the bearing preload on both bearings does not change as the shaft travels axially. In contrast, *Baninger* has a limited range of axial shaft travel as discussed above. The *Baninger* springs 100 and 102 bias off the ring 94 which is fixed to the housing to provide bearing preload as well as thrust load capabilities. *Baninger* thereby has a limited range of axial shaft travel in which the preload on one bearing is necessarily reduced as the thrust load or preload on the other bearing is increased. *Baninger* is directed to minimization of hock loads on the bearings in the thrust loading condition to allow usage of smaller bearing [Col 1, lines 8-20]. This is significantly different than Applicant.

It is believed that this application is in condition for allowance. The Commissioner is authorized to charge \$570 to Deposit Account No. 21-2079 for 3 additional claims in excess of 20 and a two month extension of time. If any additional fees or extensions of time are required, please charge to Deposit Account No. 21-0279. Applicant's representative can be contacted at the number indicated below.

Respectfully Submitted,

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Unabridged
Dictionary

Main Entry

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Merriam-Webster
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16 entries found.

washer[1,noun]
washer[2,transitive verb]
air washer
check washer
drum washer
gold washer
gully washer
lock washer
log washer
slot washer
smoke washer
socket washer
space washer
spring washer
timing washer
washer-up

To select an entry, click on it.
Click 'Go' if one entry is listed.

Go

Double-click any word in the
entry to see its definition.

Main Entry: ¹wash·er [Pronunciation Guide](#)

Pronunciation: 'wòshə(r), 'wäsh-, 'wòish-, ÷ 'wörsh- or 'wärsh-

Function: *noun*

Inflected Form(s): -s

Etymology: Middle English *wassher*, from *wasshen* to wash + -*er*

1 a : a person who washes ; *specifically* : a worker who cleans by washing (as clothes, animals, or materials or products in processes of preparation, manufacture, or maintenance) **b** : a machine for washing something: as (1) : a device for removing dirt and soluble impurities from pulp and paper stock (2) : WASHING MACHINE (3) : an apparatus or device for washing photographic materials to remove soluble chemical products (as produced by development or fixing) (4) : an apparatus in which gases are washed : SCRUBBER c <rotary *washers*>

2 [Middle English; from the motion of its tail resembling the motion of one washing clothes or dishes] *dialect England* : PIED WAGTAIL

3 : any of various flat thin rings or perforated plates (as of metal or leather) used in joints or assemblies to insure tightness, prevent leakage, or relieve friction -- see LOCK WASHER, SPRING WASHER

4 [so called from its habit of washing its food before eating] : RACCOON

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